

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Disposition of Claims

Claims 1-15 were pending in this application. By way of the reply of December 16, 2004, claims 1, 8, and 12 were cancelled without prejudice or disclaimer and new claims 16-18 were added. Thus, claims 2-7, 11, and 13-18 are pending in this application. Claims 2 and 4 are independent. The remaining claims depend, directly or indirectly, from any of claims 2 and 4.

Claim Amendments

Claims 1-7 and 18 have been amended in this reply to clarify the present invention recited. Support for these amendments may be found, for example, in original claims. No new matter has been added. These amendments are believed to require no further prior art search.

Objection(s)

Claims 3 and 5-7 stand objected to because of lack of antecedent basis. Claims 3 and 5-7 have been amended in view of this objection. Accordingly, withdrawal of this objection is respectfully required.

Rejection(s) under 35 U.S.C § 102

Claims 2-7, 9-11, and 13-18 stand rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent 6,373,265 (hereinafter “Morimoto et al.”). For the reasons below, this rejection is respectfully traversed.

Claims 2

Independent claim 2 is directed to a sensor sheet comprising a plurality of sensors, which is capable of measuring distribution of multidimensional forces. Specifically, as shown in, for example, Fig. 1, the sensor sheet 1 of the present invention comprises a plurality of sensors 10 arranged in matrix. More specifically, as shown in, for example, Figs. 2-5, each of the plurality of sensors 10 includes a plurality of electrodes D1-D5 disposed on a film substrate 20, a reference electrode D0 grounded, and a displaceable electrode 30 supported by a supporting member 60 to face the electrodes D0-D5 such that variable capacitance elements are formed by the electrodes D1-D5 and the displaceable electrode 30. The displaceable electrode 30 contacts the reference electrode D0 when an external force is applied thereto, and, as a consequence, a signal passes through the electrodes D1-D5. Because of this configuration, each of the plurality of sensors 10 can identify the force in a multidimensional direction on the basis of the detection of changes in capacitance of the capacitance elements by changes in distances between the electrodes D1-D5 and the displaceable electrode 30, thereby allowing the sheet sensor 1 to measure distribution of the multidimensional forces. Thus, as specifically required in claim 2 of the present application, the sensor sheet 1 has a plurality of sensors 10 capable of identifying multidimensional forces.

Morimoto et al., in contrast, fails to show or suggest all of the limitations recited in claim 2. Morimoto et al. merely discloses a structure of only one electrostatic capacitive touch sensor. Specifically, as shown in Figs. 1-4, the electrostatic capacitive touch sensor S of Morimoto et al. has fixed electrodes Dx+, Dx-, Dy+, Dy-, and Dz+, which are covered with a resist film R, mounted on a substrate 1, movable electrode plate 2 facing the fixed electrodes Dx+, Dx-, Dy+, Dy-, and Dz+. The movable electrode plate 20 is configured integrally by a silicone rubber section 20 having an operation portion 20a and a conductive rubber layer section 21. Thus, an external force applied to the operation portion 20a can be identified on the basis of changes in capacitance caused by changes of a gap between any of fixed electrodes Dx+, Dx-, Dy+, Dy-, and Dz+ and the conductive rubber layer section 21. However, there exists nothing, in Morimoto et al., to teach or suggest that a sensor sheet be comprised of a plurality of sensors, each of which is capable of measuring distribution of multidimensional forces each applied to the plurality of sensors.

In view of the above, Morimoto et al. fails to show or suggest the present invention as recited in independent claim 2. Thus, claim 2 as amended is patentable over Morimoto et al. Accordingly, withdrawal of this rejection of claim 2 is respectfully requested.

Claims 3, 5, 6, 9, 10, 13, 14, and 16-18

Claims 3, 5, 6, 9, 10, 13, 14, and 16-18 depend, directly or indirectly, from claim 2 discussed above. Thus, these dependent claims are allowable for at least the same reasons as discussed above. Accordingly, withdrawal of this rejection of these claims is respectfully requested.

Among other things, claim 3 further includes “a signal is input to the plurality of first electrodes when the second electrode and the third electrode are in contact with each other.” As is apparent from an equivalent circuit diagram shown in, for example, Fig. 4, each of the plurality of sensors 10 of the sensor sheet 1 of the present invention has a switch (i.e., referred by S1) configured by the second electrode (i.e., referred by 30a) and the third electrode (i.e., referred by D0).

In the rejection, it was asserted that “a signal is input to the first elements when the second electrode D and the third electrodes are in contact (See Col. 5, lines 64-67 and Col. 6, lines 1-2, 19-23 and 33-41).” However, this is incorrect. Morimoto et al. plainly states that “[t]he fixed electrodes Dx+, Dx-, Dy+, Dy-, and Dz+ are covered with the resist film R so as to prevent these electrodes from directly contacting a conductive rubber layer section 21 which will be described later.” See col. 4, lines 59-63. This means that none of the fixed electrodes Dx+, Dx-, Dy+, Dy-, and Dz+ are in electrical contact with the conductive rubber layer section 21. Further, as shown in Fig. 11, Morimoto et al. discloses a switch, which is configured by a protrusion 21e and an independent contact-use land L1. See also col. 7, lines 25-33. However, there exists nothing in Morimoto et al. to teach or suggest that a signal is input to the fixed electrodes Dx and Dy *when* the protrusion 21e and the land L1 are in contact with each other. Rather, in view of the whole of the specification of Morimoto et al., the sensor S could *always* detect an external force applied thereto without any contact whatsoever with the land L1. See also col. 10, lines 10-25. Accordingly, claim 3 is further patentable for at least these reasons.

Further, claims 9 and 10 further include the limitation of “the plurality of sensors

are arranged in matrix.” In this rejection, it was asserted that the sensors Dx, Dy, and Dz are arranged in matrix as shown in Fig. 15. However, this is incorrect. The configuration shown in Fig. 15 is the electrostatic capacitive touch sensor itself. Thus, arranged are the fixed electrodes Dx+, Dx-, Dy+, Dy-, and Dz+. Accordingly, claims 9 and 10 are patentable for at least these reasons.

Finally, claims 13 and 14 further include the limitation of “a surface to receive the external force applied is formed to have substantially no projections and depressions.” In the rejection, it was asserted that “the surface 20a receiving the applied force has no projections and depressions.” However, measuring the distribution of the multidimensional forces applied to the sensor sheet, the present invention preferably requires the substantially flat surface as recited in claims 13 and 14. See Fig. 2 of the present invention. As is apparent from Fig. 1 of Morimoto et al., a surface of the sensor S is irregular. The level of a top surface of the operation portion 20a is different than that of a casing K. Accordingly, claims 13 and 14 are further patentable for at least these reasons.

Claims 4, 7, 11, and 15

Independent claim 4 is directed to a sensor sheet comprising a plurality of sensors, which is capable of measuring distribution of multidimensional forces. As mentioned above, the sensor sheet 1 of the present invention comprises a plurality of sensors 310 arranged in matrix. As shown in, for example, Figs. 13-16, each of the plurality of sensors 310 includes a plurality of conductive lands D11-D15 and D21-D25 disposed on a film substrate 20 to face each other, and pressure-sensitive resistance inks R11-R15 and

R21-R25 disposed between the lands D11-D15 and D21-D25. It is noted that each of the plurality of sensors 310 is of a *resistance* type. Because of this configuration, the sensor 310 can identify the distribution of force on the basis of the detection of changes in resistance between the lands D11-D15 and D21-D25. Thus, independent claim 4 includes the limitation, "a pressure-sensitive resistance member arranged between the plurality of first electrodes and the second electrode."

As discussed above, Morimoto et al. merely discloses a structure of only one electrostatic capacitive touch sensor. There is no mention in Morimoto et al. of a sensor sheet comprising a plurality of sensor. Further, the resist film R noted by the Examiner is to prevent the fixed electrodes Dx+, Dx-, Dy+, Dy-, and Dz+ from directly contacting the conductive rubber layer section 31, as discussed above. Thus, the resist film R is not the same as, or equivalent to, the pressure-sensitive resistance member as recited in claim 4. Accordingly, Morimoto et al. fails to show or suggest all of the limitations as recited in claim 4.

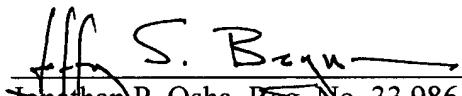
In view of the above, Morimoto et al. fails to show or suggest the present invention as recited in the independent claim 4. Thus, claim 4 is patentable over Morimoto et al. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

These above amendments and remarks are believed to require no further prior art search or, at least, simplify issues for appeal. Accordingly, entry and favorable consideration is respectfully requested. Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 07700.042001).

Respectfully submitted,

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Jonathan P. Osha, Reg. No. 33,986
Osha Liang L.L.P.
One Houston Center, Suite 2800
1221 McKinney Street
Houston, TX 77010
Telephone: (713) 228-8600
Facsimile: (713) 228-8778

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